

# Data collection procedures of Agronomic crops

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## Sampling

Methods of selecting a sample are called sampling.

Sampling may be of following types:

- (1) Simple Random Sampling\*\*\*
- (2) Stratified random sampling\*
- (3) Purposive sampling\*
- (4) Systematic sampling\*
- (5) Cluster sampling\*
- (6) Multistage sampling
- (7) Double sampling
- (8) Area sampling
- (9) Quota sampling
- (10) Mixed sampling

## Sample

A sample is a small **represented part of a population**. For example, in order to investigate the plant height of a crop, some plants are selected to collect necessary data. These plants are a sample.

## Sample size

The **number of elements selected for a sample** is known as the sample size. A sample of size less than 30 is termed as a small sample and that having 30 or more elements is termed as a large sample. Statistics change with sample size.

## Objectives of sampling

1. Sampling is more useful for taking **timely and quick** decision
2. It saves **money**
3. It ensures the **accuracy** of results
4. It **represents population** if it can be properly done.
5. It creates a **greater scope**.
6. Large **population problems** can be avoided

## Data collection for Agronomic Research

### Meteorological data

- Latitude and altitude of the location of the study
- Daily meteorological parameters
  - ✓ Solar radiation
  - ✓ Rainfall
  - ✓ Maximum and minimum temperature
  - ✓ Sunshine hours
  - ✓ Wind speed
  - ✓ Relative humidity

### Crop data

- Phonological observation: Date of sowing, emergence, floral initiation, anthesis, physiological maturity.
- Agronomic observations: The agronomic observations to be recorded at all the phonological stages of crop include plant population, number of leaves/plant, maximum leaf area of individual leaf, LAI, diurnal leaf water potential, diurnal leaf temperature, PAR, plant height, leaf weight, culm weight, dry matter, head/ear weight, grain weight, etc.
- Final grain yield and yield components.

### Soil data

Soil type, soil depth, structure, texture, water holding capacity, soil profile structure, bulk density, salinity, alkalinity, pH, EC, microbial content, soil fertility, soil productivity, available soil moisture, wilting point, permanent wilting point and available moisture at different stages of crop.

### Management data

Amount of irrigation, fertilizer quantity, herbicide quantity, date and mode of application, insecticide quantity and date of application, etc.

### Biometric observations in field crops

It is important to collect data on various **growth and yield parameters** which may facilitate to interpret the results in a better way. Generally growth parameters such as **plant, height, tiller production, leaf area index and dry matter production** are recorded. In addition, yield parameters may also be recorded. The growth and yield parameters may be recorded at different growth stages viz. **tillering, primodial initiation, flowering and at harvest**. Observations can also be taken at 20, 40, 60, 80 and 100 days after planting or sowing. Appropriate **method** of sampling and proper **measurement** are important to get a valid data. The growth and yield parameters that should be recorded for important field crops are given below:

## Rice

1. Plant height
2. Leaf area index (LAI)
3. Tiller production
4. Dry matter production
5. Number of panicles/m<sup>2</sup>
6. Number of spikelets/panicle
7. Filled grain %
8. Test grain weight
9. Grain yield
10. Straw yield

## Wheat

1. Plant height
2. Leaf area index (LAI)
3. Tillers/m row length
4. Effective tillers/m row length
5. Number of spikelets/panicle
6. Number of grains/panicle
7. Test grain weight
8. Grain yield
9. Straw yield

## Maize

1. Cobs/plant
2. Cob weight
3. Grains/cob
4. Test grain weight
5. Grain yield
6. Stover yield

## Millets

1. Number of effective tillers/hill
2. Spikes/panicles
3. 1000 grain weight
4. Grain yield
5. Straw yield

## Pulses

1. Number of pods/plant
2. Number of grains/pod
3. Weight of pods/plant
4. Test grain weight
5. Grain yield

### Groundnut

1. Number of pods/plant
2. Mature pods/plant
3. Immature pods/plant
4. Pod weight/plant
5. 1000 kernel weight
6. Pod yield
7. Haulm yield

### Rapeseed-mustard

1. Plant height
2. Number of branches/plant
  - Primary
  - Secondary
  - Tertiary
3. Numbers of siliquae/plant
4. Number of seeds/siliquae
5. 1000 seed weight
6. Seed yield
7. Stover yield

### Sunflower

1. Head diameter
2. Seed weight/plant
3. 100 seed weight/plant
4. Seed yield

### Soybean

1. No. of branches/plant
2. Number of pods/plant
3. Pod weight/plant
4. Number of seeds/pod
5. 100 seed weight
6. Seed yield

### Sesame

1. Plant height
2. Branches/plant
3. Capsules/plant
4. Length of capsule
5. Seeds/capsule
6. Test weight of seed
7. Grain weight/plant
8. Grain yield

## Jute

1. Plant population/m<sup>2</sup>\*
2. Plant height\*
3. No. of branches/plant\*
4. Number of leaves\*
5. Leaf area\*
6. Diameter of stem\*
7. Fibre yield\*
8. Stick yield\*
9. Total capsules/plant\*\*
10. Diameter of capsule\*\*
11. Seeds/capsule\*\*
12. Test weight of seed\*\*
13. Seed yield\*\*

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\*data for fibre purpose

\*\* data for seed purpose

## Cotton

1. Number of monopidials and sympodials
2. Number of bolls/plant
3. Seed cotton weight/boll
4. Seed cotton yield
5. Lint yield

## Sugarcane

1. Length of milleable cane
2. Number of internodes/cane
3. Diameter of the cane
4. Cane weight
5. Number of milleable canes/m<sup>2</sup>
6. Cane yield

## Tobacco

1. Total cured leaf yield
2. First grade leaf
3. Leaf yield

## Forages

- Green forage yield

## Green manures

- Biomass production/unit area